Dronin’ on Catfish

William Shuart
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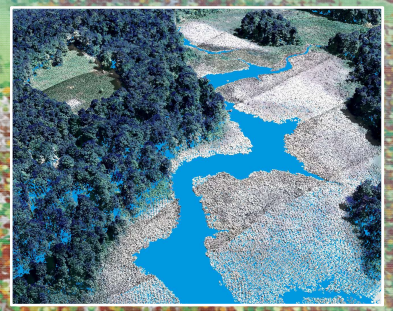

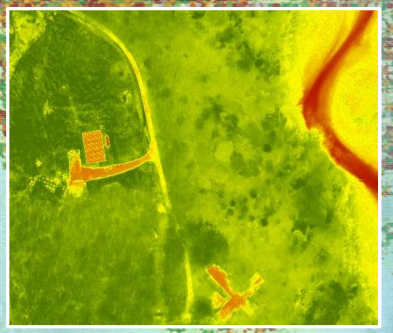

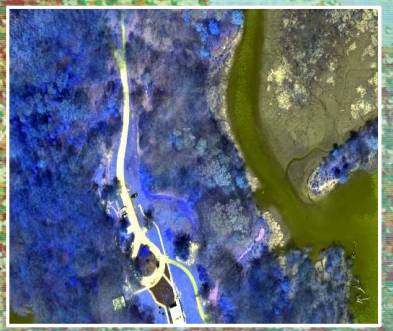

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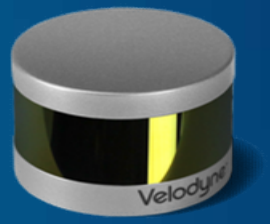
Advantages of UAV systems for data collection

- Unparalleled temporal and spatial resolutions
- Inertial measurement unit (IMU) and GPS
  - Logging, attitude, location (L1, L2, GLONASS, RTK, PPK)
- Flexible deployment
  - *Relatively* simple operation
- Potential for very rapid data acquisition and processing
- System! Closely tied hardware and software
- FAA Rule Changes – Part 107



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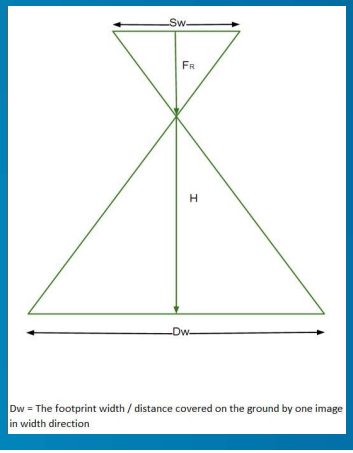
Process

- UAV – 3DR Solo
- Payload: GoPro Hero Black
- GPS/IMU
- Python Scripts
- Multiplex Video – MISB Format
  - EXIF

Sw	69.5	= the sensor width of the camera (millimeters)
FR	17.2	= the focal length of the camera (millimeters)
H	30	= the flight height (meters)
imW	3840	= the image width (pixels)
imH	2160	= the image height (pixels)
GSD	3.16	= Ground Sampling Distance (centimeters/pixel)
Dw	121	= width of single image footprint on the ground (meters)
DH	68	= height of single image footprint on the ground (meters)



Dw = The footprint width / distance covered on the ground by one image in width direction

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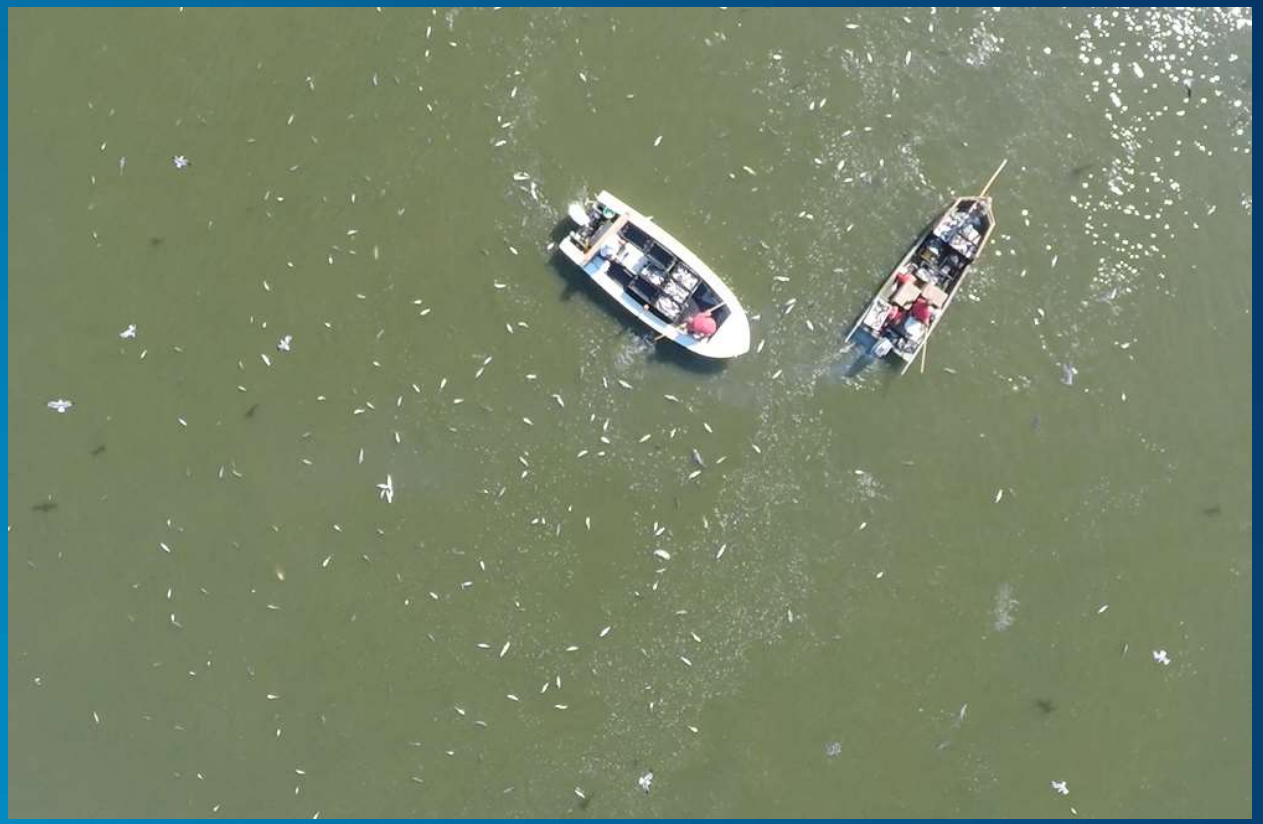
Results

- 7 flights – 7-10 minutes
- Hover at 50m, 75m, 100m
  - Field of View
  - Resolution
- Size Class
- Catch efficiency
- Range of field
- Bird interaction
- Abundance
- Biomass



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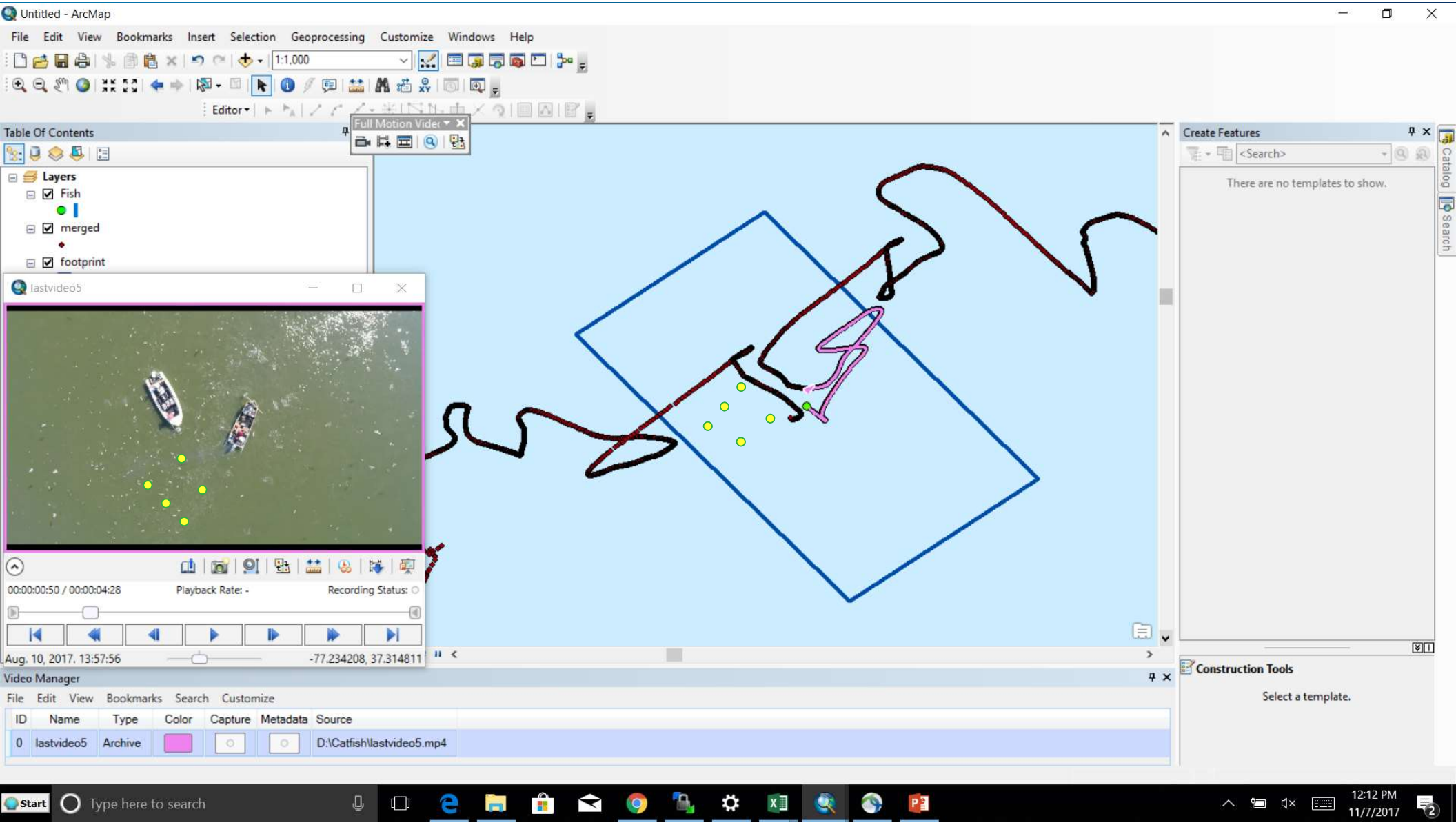
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Full Motion Video
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Fish
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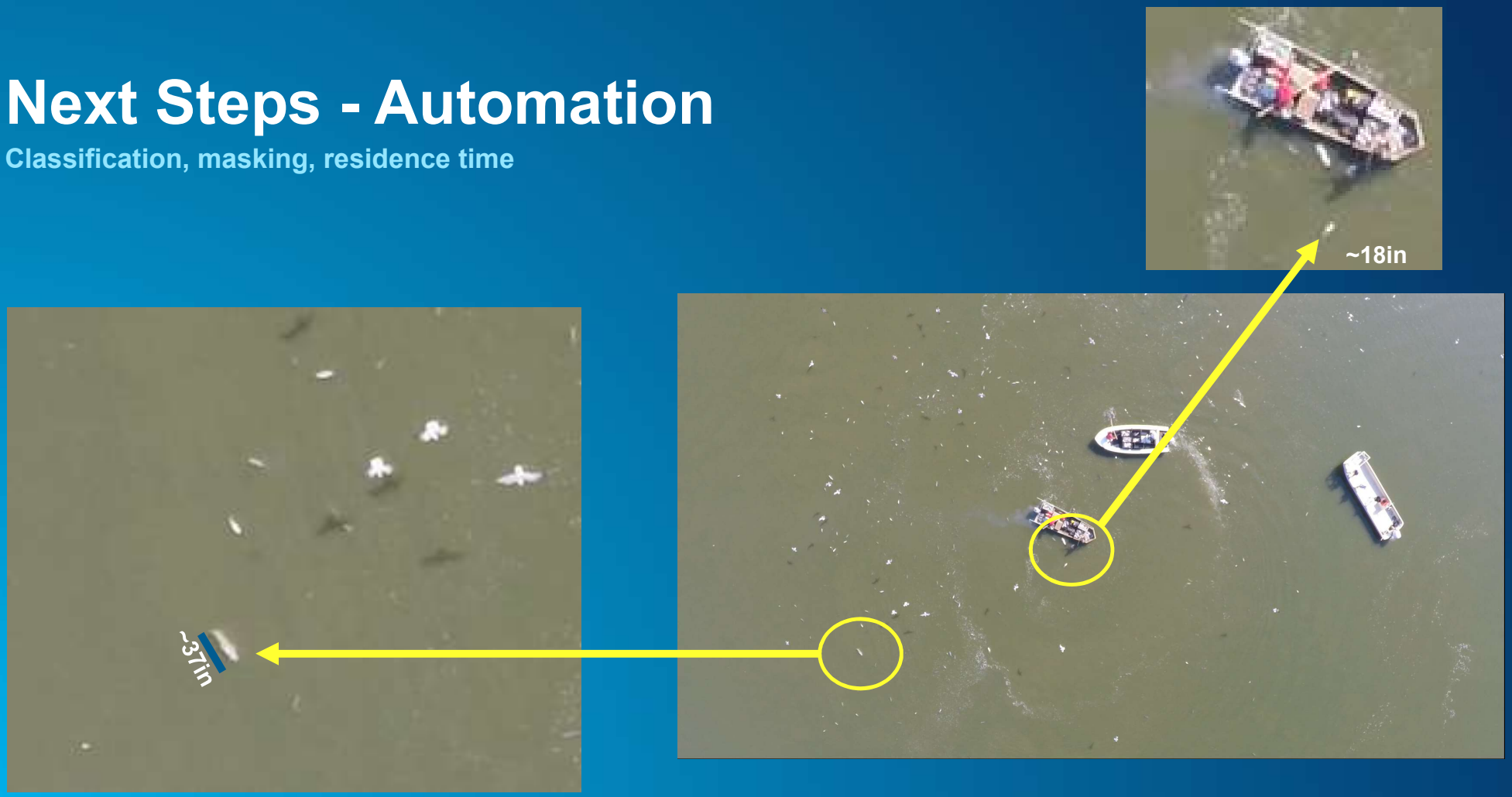
Next Steps - Automation

Classification, masking, residence time



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